

pattern onto a workpiece by using the exposure apparatus as defined in claim 10.--

*A10
Calkin*
--24. A method for producing a device, comprising the step of transferring a device pattern onto a workpiece by using the exposure apparatus as defined in claim 11.--

--25. A method for producing a device, comprising the step of transferring a device pattern onto a workpiece by using the exposure apparatus as defined in claim 12.--

REMARKS

Claims 1 - 25 are are pending. By this Preliminary Amendment, the specification and claims 14-15 are amended. Claims 21-25 are added to compensate for the material deleted from claims 14-15. Prompt and favorable examination on the merits is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. 1.121(c)(1)(ii)).

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Thomas J. Pardini
Registration No. 30,411

JAO:TJP/mlb
Attached: Appendix
Date: January 22, 2002

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
--

APPENDIX

Changes to Specification:

Page 7, line 1 to page 7, line 18:

A first exposure method according to the present invention resides in an exposure method for illuminating a first object-(41) with an exposure light beam and exposing a second object-(61) with the exposure light beam having passed through a pattern on the first object; the exposure method comprising tightly enclosing a space-(BMU to WST) which includes at least a part of an optical path for the exposure light beam; and filling the tightly enclosed space with a predetermined gas through which the exposure light beam is transmitted, until a gas pressure approximate to a first gas pressure-(P1) is obtained, by alternately repeating, a plurality of times, a pressure-reducing step of reducing a pressure of a gas in the tightly enclosed space until a gas pressure approximate to a second gas pressure-(P2) lower than the first gas pressure is obtained; and a filling step of supplying the predetermined gas to the tightly enclosed space until an intermediate gas pressure-(P3) between the first gas pressure and the second gas pressure is obtained.

Page 8, line 5 to page 8, line 10:

In this case, the first gas pressure-(P1) is, for example, 900 hPa to 1100 hPa, i.e., approximately 1 atm. (atmospheric pressure). The second gas pressure-(P2) is, for example, within a range of 50 Pa to 10 kPa, i.e., approximately 0.1 to 0.01 atm. It is unnecessary that the second gas pressure is extremely in the high vacuum.

Page 8, line 11 to page 8, line 24:

In another aspect, a second exposure method according to the present invention resides in an exposure method for illuminating a first object-(41) with an exposure light beam and exposing a second object-(61) with the exposure light beam having passed through a pattern on the first object; the exposure method comprising tightly enclosing a space-(BMU-

to ~~WST~~) which includes at least a part of an optical path for the exposure light beam; the exposure method further comprising a first step of substituting the tightly enclosed space with a first gas through which the exposure light beam is transmitted; and a subsequent second step of substituting the tightly enclosed space with a second gas through which the exposure light beam is transmitted, the second gas being different from the first gas.

Page 9, line 7 to page 9, line 21:

In still another aspect, a first exposure apparatus according to the present invention resides in an exposure apparatus for illuminating a first object ~~(41)~~ with an exposure light beam and exposing a second object ~~(61)~~ with the exposure light beam having passed through a pattern on the first object; the exposure apparatus comprising a gas-tight chamber ~~(2 to 6)~~ which tightly encloses a space ~~(BMU to WST)~~ including at least a part of an optical path for the exposure light beam; and a gas supply unit ~~(S2 to S6)~~ which supplies a predetermined gas through which the exposure light beam is transmitted, to interior of the gas-tight chamber; wherein the gas supply unit has an impurity-removing filter including a light-absorbing gas-removing filter ~~(15)~~ which removes at least one of oxygen and steam contained in the predetermined gas.

Page 10, line 1 to page 10, line 17:

In still another aspect, a second exposure apparatus according to the present invention resides in an exposure apparatus for illuminating a first object with an exposure light beam and exposing a second object with the exposure light beam having passed through a pattern on the first object; the exposure apparatus comprising a gas-tight chamber ~~(2 to 6)~~ which tightly encloses a space ~~(BMU to WST)~~ including at least a part of an optical path for the exposure light beam; a gas supply unit ~~(S2 to S6)~~ which supplies a predetermined gas through which the exposure light beam is transmitted, to interior of the gas-tight chamber; a gas concentration-measuring unit ~~(112)~~ which measures a concentration of a predetermined

residual gas remaining in the space in the gas-tight chamber; and an opening/closing mechanism-(V13, V14) which opens/closes a passage for the gas between the space in the gas-tight chamber and the gas concentration-measuring unit.

Page 11, line 1 to page 11, line 26:

In still another aspect, a third exposure apparatus according to the present invention resides in an exposure apparatus for illuminating a first object with an exposure light beam and exposing a second object with the exposure light beam having passed through a pattern on the first object; the exposure apparatus comprising a gas-tight chamber-(2 to 6) which tightly encloses a space-(BMU to WST) including at least a part of an optical path for the exposure light beam; a gas supply unit-(S2 to S6) which supplies a predetermined gas through which the exposure light beam is transmitted, to interior of the gas-tight chamber; an openable/closable cutoff valve-(V12, V1) which is provided in a supply passage for the predetermined gas to be supplied by the gas supply unit; and a control unit-(17, 18) which closes the cutoff valve in case of emergency and in case of maintenance for the exposure apparatus to stop the supply of the predetermined gas to the gas-tight chamber. According to the exposure apparatus as defined above, the interior of the gas-tight chamber can be filled with the gas through which the exposure light beam is transmitted, in a short period of time by closing the cutoff valve in case of emergency and in case of maintenance, introducing the external air into the gas-tight chamber to perform predetermined operation, and then opening the cutoff valve again. Therefore, it is possible to efficiently carry out the exposure method of the present invention.

Page 13, line 16 to page 14, line 2:

In still another aspect, a method for producing a device according to the present invention resides in a method for producing a device, comprising the step of transferring a device pattern onto a workpiece-(61) by using the exposure method of the present invention

or the exposure apparatus of the present invention. When the exposure method of the present invention is used, then the transmittance of the optical path for the exposure light beam is maintained to be high, and the illuminance (exposure energy) of the exposure light beam on the workpiece is maintained to be high. Therefore, the throughput of the exposure step is improved, and it is possible to produce the device at the high throughput.

Page 18, line 7:

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS~~BEST MODE~~
~~FOR CARRYING OUT THE INVENTION~~

Changes to Claims:

Claims 21-25 are added.

The following are marked-up versions of the amended claims:

14. (Amended) A method for producing a device, comprising the step of transferring a device pattern onto a workpiece by using the exposure method as defined in claim 1 ~~any one of claims 1 to 4~~.

15. (Amended) A method for producing a device, comprising the step of transferring a device pattern onto a workpiece by using the exposure apparatus as defined in claim 5 ~~any one of claims 5 to 13~~.